AMENDMENTS TO THE CLAIMS

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (original): A sensor utilizing attenuated total reflection, comprising:

a first dielectric block;

a thin film layer, formed on a first face of said dielectric block, for placing a sample thereon;

a light source for emitting a light beam;

an optical incidence system for collimating said light beam, and making the collimated light beam enter said dielectric block at a predetermined incidence angle so that a condition for total internal reflection is satisfied at an interface between said dielectric block and said thin film layer; and

photodetection means for detecting the refractive index distribution of said sample that is obtained within a plane along said interface, by detecting an image carried by the light beam totally reflected at said interface;

wherein an optical compensation system for compensating for image distortion which is produced by said dielectric block when said predetermined incidence angle of said light beam varies is provided.

2. (original): The sensor as set forth in claim 1, wherein said optical compensation system comprises:

a second dielectric block for compensation, having the same cross section as that of said first dielectric block within an incidence plane of said light beam with respect to said interface, also being formed from a material of the same refractive index as said first dielectric block, and being disposed so that it receives the light beam emerging from said first dielectric block; and

a screen for image observation, formed on a face of said second dielectric block that corresponds to said first face of said first dielectric block.

3. (original): The sensor as set forth in claim 2, wherein said screen is composed of diffusers.

4. (original): The sensor as set forth in claim 2, wherein said screen is composed of phosphors.

5. (original): The sensor as set forth in claim 1, wherein said first dielectric block is formed as a single block having said first face on which said thin film layer is formed, a second face that said light beam enters, and a third face from which said light beam emerges.

6. (original): The sensor as set forth in claim 1, wherein

said first dielectric block comprises a first portion having a second face that said light beam enters and a third face from which said light beam emerges, and a second portion having said first face on which said thin film layer is formed; and

said first portion and said second portion are joined together through a refractive index-matching means.

7. (original): A sensor utilizing attenuated total reflection that occurs due to surface plasmon resonance, comprising:

a first dielectric block;

a thin film layer comprising a metal film, formed on a first face of said dielectric block, for placing a sample thereon;

a light source for emitting a light beam;

an optical incidence system for collimating said light beam, and making the collimated light beam enter said dielectric block at a predetermined incidence angle so that a condition for total internal reflection is satisfied at an interface between said dielectric block and said thin film layer; and

photodetection means for detecting the refractive index distribution of said sample that is obtained within a plane along said interface, by detecting an image carried by the light beam totally reflected at said interface;

wherein an optical compensation system for compensating for image distortion which is produced by said dielectric block when said predetermined incidence angle of said light beam varies.

8. (original): The sensor as set forth in claim 7, wherein said optical compensation system comprises:

a second dielectric block for compensation, having the same cross section as that of said first dielectric block within an incidence plane of said light beam with respect to said interface, also being formed from a material of the same refractive index as said first dielectric block, and being disposed so that it receives the light beam emerging from said first dielectric block; and

a screen for image observation, formed on a face of said second dielectric block that corresponds to said first face of said first dielectric block.

9. (original): The sensor as set forth in claim 8, wherein said screen is composed of diffusers.

10. (original): The sensor as set forth in claim 8, wherein said screen is composed of phosphors.

11. (original): The sensor as set forth in claim 7, wherein said first dielectric block is formed as a single block having said first face on which said thin film layer is formed, a second face that said light beam enters, and a third face from which said light beam emerges.

12. (original): The sensor as set forth in claim 7, wherein

said first dielectric block comprises a first portion having a second face that said light beam enters and a third face from which said light beam emerges, and a second portion having said first face on which said thin film layer is formed; and

said first portion and said second portion are joined together through a refractive index-matching means.

13. (original): A sensor utilizing attenuated total reflection which occurs when a waveguide mode in an optical waveguide layer is excited, comprising:

a first dielectric block;

a thin film layer comprising (1) a cladding layer formed on a first face of said dielectric block and (2) said optical waveguide layer formed on said cladding layer;

a light source for emitting a light beam;

an optical incidence system for collimating said light beam, and making the collimated light beam enter said dielectric block at a predetermined incidence angle so that a condition for

total internal reflection is satisfied at an interface between said dielectric block and said cladding layer; and

photodetection means for detecting the refractive index distribution of said sample that is obtained within a plane along said interface, by detecting an image carried by the light beam totally reflected at said interface;

wherein an optical compensation system for compensating for image distortion which is produced by said dielectric block when said predetermined incidence angle of said light beam varies.

14. (original): The sensor as set forth in claim 13, wherein said optical compensation system comprises:

a second dielectric block for compensation, having the same section as that of said first dielectric block within an incidence plane of said light beam with respect to said interface, also being formed from a material of the same refractive index as said first dielectric block, and being disposed so that it receives the light beam emerging from said first dielectric block; and

a screen for image observation, formed on a face of said second dielectric block that corresponds to said first face of said first dielectric block.

15. (original): The sensor as set forth in claim 14, wherein said screen is composed of diffusers.

16. (original): The sensor as set forth in claim 14, wherein said screen is composed of phosphors.

17. (original): The sensor as set forth in claim 13, wherein said first dielectric block is formed as a single block having said first face on which said thin film layer is formed, a second face that said light beam enters, and a third face from which said light beam emerges.

18. (original): The sensor as set forth in claim 13, wherein

said first dielectric block comprises a first portion having a second face that said light beam enters and a third face from which said light beam emerges, and a second portion having said first face on which said thin film layer is formed; and

said first portion and said second portion are joined together through a refractive index-matching means.

19. (original): A sensor utilizing attenuated total reflection, comprising:

a light source for emitting a light beam;

a measuring unit comprising (1) a dielectric block transparent to said light beam, (2) a thin film layer formed on a first face of said dielectric block, and (3) a sample holding mechanism for holing a sample on said thin film layer;

an optical incidence system for collimating said light beam so that said light beam has a cross section of considerable size, and making the collimated light beam enter said dielectric block at a predetermined incidence angle so that a condition for total internal reflection is satisfied at an interface between said dielectric block and said thin film layer;

a screen, disposed in an optical path of the collimated light beam totally reflected at said interface, for converting light intensity distribution in the cross section of said collimated light beam into a visual image;

a two-dimensional sensor on which said visual image on said screen is formed; and

an optical image-forming system for forming said visual image on said screen onto said two-dimensional sensor.

20. (original): The sensor as set forth in claim 19, wherein said screen comprises a diffusing plate.

21. (original): The sensor as set forth in claim 19, wherein said screen comprises a fluorescent plate.

22. (original): The sensor as set forth in claim 19, wherein a sensing medium that interacts with a specific component in said sample is disposed on said thin film layer.

23. (original): The sensor as set forth in claim 19, wherein said sample holding mechanism is formed into the shape of a container having a liquid-holding portion for holding a liquid sample.

24. (original): The sensor as set forth in claim 22, wherein said sample holding mechanism is provided with a passage through which a liquid sample passes while contacting said sensing medium.

25. (original): The sensor as set forth in claim 19, wherein

said dielectric block comprises a first portion having a second face that said light beam enters and a third face from which said light beam emerges, and a second portion formed separately from said first portion and having said first face on which said thin film layer is formed;

said second portion and said sample holding mechanism are formed integrally with each other; and

said second portion is joined with said first portion through a refractive index-matching means.

26. (original): The sensor as set forth in claim 19, wherein said dielectric block, thin film layer, and sample holding mechanism of said measuring unit are formed integrally with one another.

27. (original): A sensor utilizing attenuated total reflection that occurs due to surface plasmon resonance, comprising:

a light source for emitting a light beam;

a measuring unit comprising (1) a dielectric block transparent to said light beam, (2) a thin film layer comprising a metal film, formed on a first face of said dielectric block, and (3) a sample holding mechanism for holing a sample on said thin film layer;

an optical incidence system for collimating said light beam so that said light beam has a cross section of considerable size, and making the collimated light beam enter said dielectric block at a predetermined incidence angle so that a condition for total internal reflection is satisfied at an interface between said dielectric block and said thin film layer;

a screen, disposed in an optical path of the collimated light beam totally reflected at said interface, for converting light intensity distribution in the cross section of said collimated light beam into a visual image;

a two-dimensional sensor on which said visual image on said screen is formed; and

an optical image-forming system for forming said visual image on said screen onto said two-dimensional sensor.

28. (original): The sensor as set forth in claim 27, wherein said screen comprises a diffusing plate.

29. (original): The sensor as set forth in claim 27, wherein said screen comprises a fluorescent plate.

30. (original): The sensor as set forth in claim 27, wherein a sensing medium that interacts with a specific component in said sample is disposed on said thin film layer.

31. (original): The sensor as set forth in claim 27, wherein said sample holding mechanism is formed into the shape of a container having a liquid-holding portion for holding a liquid sample.

32. (original): The sensor as set forth in claim 30, wherein said sample holding mechanism is provided with a passage through which a liquid sample passes while contacting said sensing medium.

33. (original): The sensor as set forth in claim 27, wherein

said dielectric block comprises a first portion having a second face that said light beam enters and a third face from which said light beam emerges, and a second portion formed separately from said first portion and having said first face on which said thin film layer is formed;

said second portion and said sample holding mechanism are formed integrally with each other; and

said second portion is joined with said first portion through a refractive index-matching means.

34. (original): The sensor as set forth in claim 27, wherein said dielectric block, thin film layer, and sample holding mechanism of said measuring unit are formed integrally with one another.

35. (original): A sensor utilizing attenuated total reflection that occurs when a waveguide mode in an optical waveguide layer is excited, comprising:

a light source for emitting a light beam;

a measuring unit comprising (1) a dielectric block transparent to said light beam, (2) a thin film layer comprising a cladding layer formed on a first face of said dielectric block, and said optical waveguide layer formed on said cladding layer, and (3) a sample holding mechanism for holing a sample on said thin film layer;

an optical incidence system for collimating said light beam so that said light beam has a cross section of considerable size, and making the collimated light beam enter said dielectric block at a predetermined incidence angle so that a condition for total internal reflection is satisfied at an interface between said dielectric block and said thin film layer;

a screen, disposed in an optical path of the collimated light beam totally reflected at said interface, for converting light intensity distribution in the cross section of said collimated light beam into a visual image;

a two-dimensional sensor on which said visual image on said screen is formed; and

an optical image-forming system for forming said visual image on said screen onto said two-dimensional sensor.

36. (original): The sensor as set forth in claim 35, wherein said screen comprises a diffusing plate.

37. (original): The sensor as set forth in claim 35, wherein said screen comprises a fluorescent plate.

38. (original): The sensor as set forth in claim 35, wherein a sensing medium that interacts with a specific component in said sample is disposed on said thin film layer.

39. (original): The sensor as set forth in claim 35, wherein said sample holding mechanism is formed into the shape of a container having a liquid-holding portion for holding a liquid sample.

40. (original): The sensor as set forth in claim 38, wherein said sample holding mechanism is provided with a passage through which a liquid sample passes while contacting said sensing medium.

41. (original): The sensor as set forth in claim 35, wherein

said dielectric block comprises a first portion having a second face that said light beam enters and a third face from which said light beam emerges, and a second portion formed separately from said first portion and having said first face on which said thin film layer is formed;

said second portion and said sample holding mechanism are formed integrally with each other; and

said second portion is joined with said first portion through a refractive index-matching means.

42. (original): The sensor as set forth in claim 35, wherein said dielectric block, thin film layer, and sample holding mechanism of said measuring unit are formed integrally with one another.

43. (new): The sensor as set forth in claim 1, wherein said optical compensation system comprises:

a second dielectric block having a same cross section as that of said first dielectric block within an incidence plane of said light beam with respect to said interface, said second dielectric block being formed from a material of the same refractive index as said first dielectric block, and being disposed so that it receives a light beam emerging from said first dielectric block.